

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**DESIGN AND TECHNOLOGY**

**0445/13**

Paper 1 Design

**October/November 2010**

**1 hour 15 minutes**

Candidates answer on the pre-printed A3 Answer Sheets.

Additional Materials: Standard drawing equipment

**To be taken together with the optional paper for which you have been entered in one session of 2 hours and 15 minutes**

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name in the spaces on **both** printed Answer Sheets.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **one** question.

Write/draw your answers in the spaces provided on the Answer Sheets.

You may use a calculator.

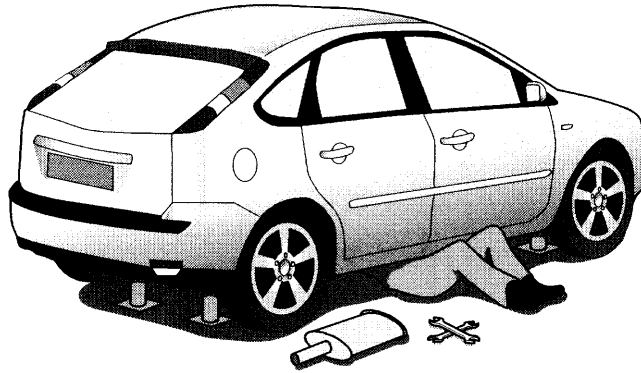
At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of 4 printed A4 pages and an Insert.

Answer **one** question only on the A3 pre-printed answer sheets provided.

- 1 It can be very difficult to crawl underneath a car to repair parts if the access is awkward and tools are not easily at hand.



Design a device that would allow a person to slide under a car easily and would include provision to hold a few tools.

- (a) List **four** additional points about the function of such a device that you consider to be important. [4]
- (b) Use sketches and notes to show **two** different methods by which a device of this type could move. [4]
- (c) Develop and sketch ideas for the device. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution in the school workshop. [6]

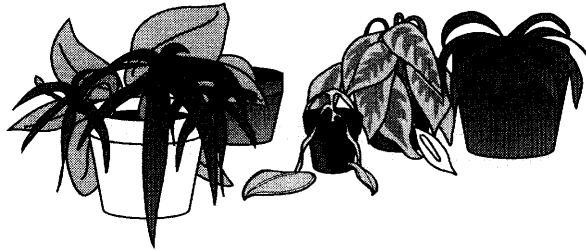
- 2 Ski Well, a winter holiday company, is looking for a new feature for its catalogue, making it different from other companies.



Design an animated or pop-up feature to appear in or on the Ski Well 2011 catalogue.

- (a) List **four** additional points about the function of such an animated or pop-up feature that you consider to be important. [4]
- (b) Use sketches and notes to show **two** types of mechanism that could be made from card materials. [4]
- (c) Develop and sketch ideas for an animated or pop-up feature. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline the method of producing a prototype of your solution in the school graphics studio. [6]

- 3 Plants in pots need to be watered regularly and this can cause problems when a person is away for a long period.



Design an automatic watering system that would keep the plants healthy when left for long periods.

- (a) List **four** additional points about the function of such a watering system that you consider to be important. [4]
- (b) Use sketches and notes to show **two** different ways of controlling the flow of water. [4]
- (c) Develop and sketch ideas for the watering system. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution in the school workshop. [6]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.